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96-RF-01979

DIST	LTR	ENC
BENSUSSEN, S		
BUHL, A, R		
FERRERA, D W	X	X
HILL, J A		
KELL, R E	X	X
MANI, V M	X	X
MARTINEZ, L A		
McKAY, R C		
McKIBBON, J G		
O BRIEN, G D	X	X
SCHADE, A R	X	X
SPEARS, M S	X	X
TUOR, N R		
VOORHEIS, G	X	X
WALLER, C A	X	X
BERNARD, A C	X	X
CASE, J N	X	X
CRONIN, R D	X	X
CROUCHER, D W	X	X
DANNA, M A	X	X
DYE, A A	X	X
FRANZ, W A	X	X
GELLUND, G C	X	X
AWTON, W M	X	X
SNYDER, D P	X	X
STEPHENS, L S	X	X
SWANSON, D R	X	X
WEAVER, L G	X	X
ZIMMER, J J	X	X
ZIMMERMAN, G A	X	X
CORRES CONTROL	X	X
ADMIN	X	X
TRAFFIC		
ATS/T130G		

CLASSIFICATION		
JCNI		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

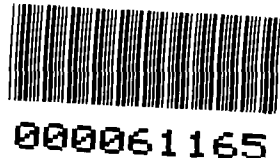
AUTHORIZED  
CLASSIFIER SIGNATURE  
*Ed Jett*

DATE 3-27-96

ACTION ITEM STATUS  
☒ PARTIAL/OPEN  
☐ CLOSED

FOR APPROVALS  
J A Zimmerman  
J Zimmer  
A S Spears  
L E Kell

IN REPLY TO RFP CC NO  
NONE  
RIG & TYPIST INITIALS  
WML pjs  
F-46469 (Rev 4/25/95)



April 4 1996

96-RF-01979

David A Brockman  
Assistant Manager  
Strategy, Integration & Guidance  
DOE, RFFO

UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) OF BUILDING 776 ADVANCED SIZE REDUCTION FACILITY (ASRF) GLOVE INSPECTION AND WASHING PROCEDURE 4-R53-776-ASRF-006 VM-104-96

- Ref (a) JCO-95 0056-776/777-MAD Justification for Continuation of Operation (JCO) Building 776/777 Limited Scope of Operations Revision 6
- (b) V Mani ltr VM-021-96 to D A Brockman JCO Building 776/777 Limited Scope Operations Revision 6 January 23 1996
- (c) D A Brockman ltr (07301) to V Mani Approval of Building 776/777 JCO for Limited Scope Operations, Revision 6, February 6, 1996
- (d) V Mani ltr, VM-049-96, to D A Brockman, JCO Building 776/777 Unreviewed Safety Question Determination (USQD) of Building 776 Advanced Size Reduction Facility (ASRF) Glove Inspection and Washing Procedure 4-R53-776-ASRF-006 February 22, 1996

PURPOSE

This letter transmits Revision 1 of USQD-776-96 0257-WML, ASRF Facility Glove Washing and Inspection Procedure 4-R53-776-ASRF-006 (Attachment 1) to the Department of Energy (DOE) for review and approval. Revision 1 of this USQD addresses the new requirements of Procedure 3-J69-NSPM-5C-01 *Evaluation of Unreviewed Safety Questions Revision 1*. This USQD identifies an increase in the potential consequences for previously analyzed accidents (a spill and a fire) for Building 776/777 while performing glove inspection and washing in the ASRF. This USQD also identifies an increase in the probability of a radioactive spill during this activity. Revision 0 of this USQD was submitted to DOE in Reference (d). This submittal supersedes Reference (d).

DISCUSSION

The subject washing procedure (4-R53-776-ASRF-006) provides instructions for the visual inspection washing sampling and repackaging of acid-contaminated, leaded glovebox gloves in the Barrel Dump Glovebox of the ASRF. This activity is a risk reduction activity required to ensure long term safe storage of these gloves.

ADMIN RECCRD

BT76-A-000050

Y12

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This Unreviewed Safety Question (USQ) addresses activity was submitted to DOE in Reference (b) Revision 6 of Reference (a) JCO-95 0056-776 washing and inspection are the same with or identified in the JCO, therefore, this USQ requires no Compensatory Actions

activity This same  
y Reference (c) as  
sks associated with glove  
nsatory Actions  
uire no Compensatory

The spill frequency for this activity is assumed to be Condition - 1 (PC-1) The Building 776/777 analysis states that radioactive spills occur at a rate of 8 per year. This activity represents a small increase in probability as analyzed in the FSAR

ated, in Plant  
ysis Report (FSAR) states  
Although the proposed  
ds the spill probability

The estimated maximum offsite individual (MOI) dose for a PC-1 event is 2 E-4 rem for a spill exceeds the authorization basis dose of 3 E-7 rem for a PC-1 event

rem for a spill exceeds

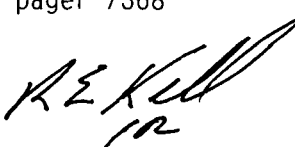
The estimated MOI dose of 2 E-4 rem for a fire event is 3 E-7 rem for a PC-2 event However The FSAR does not analyze fires for PC-1 and PC-2 events Therefore, this analysis establishes the consequence for a PC-2 fire

authorization basis dose of  
ate fires for PC-1 and  
consequence for a PC-2

#### RESPONSE REQUIREMENTS

It is requested that DOE accept the increased risk. If you have any questions or comments, please contact David A Brockman at pager 7368

by this USQ If you  
n at extension 8264 or

  
Vik Mani Vice President  
Safety, Engineering & Technical Services  
Kaiser Hill Company L L C

CONCURRENCE

  
G M Voorheis  
Vice President  
Special Material Management & Integration

4/8/96  
Date

WML 1a

Orig and 1 cc - D A Brockman

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David A Brockman  
April 4, 1996  
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Attachment  
As Stated

cc  
J M Conti  
P Hartmann  
J Jeffries  
M S Karol  
K Klein  
M S McCormick  
P M McEahern  
N Moon  
D W Sargent  
J C Selan  
L W Smith  
M J Weis

## USQD COVER SHEET

USQD No <u>USQD-776-96 0257-WML</u>		Building # <u>776/777</u>	Page <u>1</u> of <u>9</u>
Title <u>ADVANCED SIZE REDUCTION FACILITY GLOVE WASHING AND INSPECTION, 4-R53-776-ASRF-006, Rev 0</u>		Job # <u>951626-00</u>	
Preparer	<u>N/A</u> (Print Name)	<u>N/A</u> (Sign Name)	Date
Criticality Safety Reviewer	<u>A C Tang</u> (Print Name)	<u>A.C. Tang</u> (Sign Name)	Date <u>2-5-96</u>
Certified Evaluator	<u>Wayne M Lawton</u> (Print Name)	<u>Wayne M Lawton</u> (Sign Name)	Date <u>1/31/96</u>
Peer Reviewer	<u>Arthur R Stithem</u> (Print Name)	<u>Arthur R Stithem</u> (Sign Name)	Date <u>1/31/96</u>
Program Manager, NS	<u>J J Zimmer</u> (Print Name)	<u>Robert Zimmer for NS</u> (Sign Name)	Date <u>2/7/96</u>
ORC	<u>J. PATRICK NOLEN</u> (Print Name)	<u>J. Patrick Nolen</u> (Sign Name)	Date <u>2-12-96</u>
Responsible Manager	<u>JOHN BOWER</u> (Print Name)	<u>John Bower</u> (Sign Name)	Date <u>2-12-96</u>
Operations Manager	<u>McKENNA</u> (Print Name)	<u>McKENNA</u> (Sign Name)	Date <u>3/14/96</u>
Note 1 CSR	Note 2 CEV	Note 3 Peer Reviewer	Note 4 Program Manager, NS
Rev. 1 - N/A	Rev 1 WML 3-27-96	Rev. 1 AMS 3/27/96	Rev 1 3/28/96
Note 6 Responsible Manager	Note 7 Operations Manager	Note 8 Revision No.	Note 9 New Evaluation Required
Rev 1 3/28/96	Rev 1 3/28/96		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Note 1 If the CSR is needed for revision, then CSR initials, otherwise CEV marks N/A and initials Note 2 The Certified Evaluator initials for revision of USQD Note 3 Peer Reviewer initials for revision of USQD Note 4 Program Manager, NS initials for revision Note 5 ORC initials for revision Note 6 Responsible Manager initials for revision Note 7 Operations Manager initials for revision Note 8 Revision of the USQD Note 9 Check (✓) if revision significant to require reevaluation Initials above needed to confirm only No determinations and a justification is required Note 10 Changes to this USQD shall be made by a Certified Evaluator Note 11 Mark not applicable signature blanks "N/A"			

EG&G ROCKY FLATS

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REVISION DOCUMENTATION SHEET											
Revision Number	Date	Describe Changes Required for Revision or Justification for 'No Evaluation' Required									
1	3/27/96	<p>This revision incorporates the new requirements of Procedure 3-J69-NSPM-5C-01, Revision 1, Evaluation of Unreviewed Safety Questions. Revision 0 of this USQD was evaluated to Revision 0 of Procedure 3-J69-NSPM-5C-01. The following items are evaluated:</p> <p><b>Worker Risk</b> The Building 776/777 FSAR Accident Analysis, for radioactive spills only, evaluates Worker Risk for a high-level drum spill on the dock. In light of the high-level drum spill accident, worker risk would be increased proportionally by this proposed activity [i.e., the Material At Risk (MAR) for the proposed activity (1130 grams Pu) is approximately 2.3 times greater than the MAR for the drum spill (500 grams Pu) evaluated in the FSAR]. Worker risk is managed by Rocky Flats Environmental Technology Site (RFETS) Programs such as Fire Protection, Radiation Protection, ALARA, Industrial Hygiene and Safety, etc. For this planned activity personal protective equipment, facility safety systems, training, and administrative controls will be used to minimize worker risk. The radiation control program and various worker safety programs are in place to contain, control, and manage the known risk from the proposed activity. Specific training and pre-evolution briefings on the use of this procedure, potential hazards associated with the activity, and emergency actions will also minimize potential worker exposure and risk.</p> <p><b>Composite risk</b> The proposed activity is a risk reduction activity. While the risk is increased during the performance of this activity (see the increased risk in the conclusion of this USQD), the overall risk (long term) will be reduced when the proposed activity is completed.</p> <p><b>Comparison of like accidents to like accidents</b></p> <table border="0"> <tr> <td>Plant Condition and Accident</td> <td>Glove Wash Consequences</td> <td>New 5C-01 Criteria</td> </tr> <tr> <td>PC-2 Fire</td> <td>2 E-4</td> <td>No PC-2 fire</td> </tr> <tr> <td>PC-1 Spill</td> <td>8 E-6</td> <td>3 E-7</td> </tr> </table> <p><b>Summary</b></p> <p>The level of risk for PC-2 fires and PC-1 spills associated with the proposed activity and previously evaluated in the USQD is not affected by the Revision 1 to Procedure 3-J69-NSPM-5C-01.</p> <p style="text-align: right;"><i>[Signature]</i> 3-27-96</p>	Plant Condition and Accident	Glove Wash Consequences	New 5C-01 Criteria	PC-2 Fire	2 E-4	No PC-2 fire	PC-1 Spill	8 E-6	3 E-7
Plant Condition and Accident	Glove Wash Consequences	New 5C-01 Criteria									
PC-2 Fire	2 E-4	No PC-2 fire									
PC-1 Spill	8 E-6	3 E-7									

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**UNREVIEWED SAFETY QUESTION DETERMINATION**  
USQD Number USQD-776-96 0257-WML

**USQD Title**

ADVANCED SIZE REDUCTION FACILITY GLOVE WASHING AND INSPECTION, Procedure 4-R53-776-ASRF-006, Rev 0

**Description and Purpose of Proposed Activity**

The proposed activity is a procedure which provides instructions for the visual inspection, washing, sampling, and repackaging of acid-contaminated, leaded glovebox gloves in the Barrel Dump Glovebox of the Advanced Size Reduction Facility (ASRF) This procedure address the following topics

Waste introduction

Glove inspecting and washing (Barrel Dump Glovebox J-176)

Drum Closure

**Reference Documents**

- 1 Rocky Flats Environmental Technology Site 3-J69-NSPM-5C-01, *Evaluation of Unreviewed Safety Questions*, Revision 0
- 2 USQD-RFP-94 0615-ARS, Non-Resumption Plutonium Building HEPA Filter Testing at Rocky Flats Plant, Zones I, IA, and II
- 3 Justification for Continued Operation (JCO) JCO-0056-776/777-MAD, *Justification for Continued Operation, Building 776/777 Limited Scope Operations*, Revision 6 Dated January 18, 1996

**Applicable Requirements**

Building 776/777 FSAR (6/87)

Building 776/777 OSR (11/15/95)

**Safety, Operating Function, and Operating Conditions Identification**

This activity consists of washing leaded gloves that are potentially contaminated with lead nitrate compounds The purpose of the washing is to remove compounds which are chemically unstable and present a long term storage risk This activity will be performed in the ASRF Barrel Dump Glovebox where drums containing the gloves will be introduced into the glovebox The gloves will be inspected and washed in pans with a water based washing solution, the cleaned gloves will be repackaged, and the washing solutions will be sampled and bottled The repackaged gloves will then be returned to storage and the bottled solutions will be transferred to the ASRF Airlock or Barrel Dump Glovebox for storage prior to final processing This activity is a risk reduction activity required to ensure long term safe storage of these gloves

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**UNREVIEWED SAFETY QUESTION DETERMINATION**  
**USQD Number USQD-776-96.0257-WML**

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**Failure Mode, Hazard, and Accident Identification**

The inspection, washing, sampling, and repackaging of acid contaminated leaded gloves involves the opening and handling of drums containing gloves that are contaminated with potentially unstable lead nitrate compounds which present a potential fire hazard. This activity will be performed in the ASRF Barrel Dump Glovebox. The gloves will be removed from the drums in these gloveboxes and will be wiped or washed in a pan containing a water solution to remove the lead nitrate compound. The gloves will then be dried and repackaged for storage. The contaminated washing solution will be placed into four-liter bottles, sampled and placed into the ASRF Airlock or Barrel Dump Glovebox to await final processing. The NMSLs for the ASRF Barrel Dump Glovebox limit the amount of plutonium in each glovebox to 200 grams. As a result, the MAR associated with this activity is assumed to be 200 grams of plutonium plus the americium inventory of the most limiting drum. The NMSL for the drums is 200 grams Pu. The limiting drum for this activity has been identified by inventory activities to contain 15 grams of americium - 241. Due to the specific activity of americium - 241, which is 62 times that of weapons grade plutonium, the 15 gram inventory of americium represents the equivalent of 930 grams of plutonium. Consequently, the maximum MAR associated with this activity is equivalent to 1130 grams of plutonium (930 grams Pu equivalent americium plus 200 grams Pu from NMSLs). The risks associated with this activity relate to fires and spills. Explosions involving these drums are not judged to be credible based on the information presented in memorandum 95-RF-07952 (L. Dustin to T. P. Burns, dated October 13, 1995). The consequences of a spill involving the leaded gloves and packaging are judged to be insignificant since the nature of the MAR (contaminated waste) results in extremely low amounts of material released. The fire risk associated with this activity is determined as follows:

The fire frequency for this activity is determined by 1) the frequency of ignition of the lead nitrate compounds during material handling and by 2) the frequency of a room fire unrelated to this activity. In regard to item 2), the frequency of a room fire from any source is stated in the FSAR as  $1 \text{ E-2/yr}$ . The frequency of a room fire independent of this activity that is of sufficient size and intensity to impact the material associated with this activity is then necessarily less than  $1 \text{ E-2/yr}$  which falls within the PC-3 or PC-4 frequency bins. In regard to item 1), the frequency of a fire due to ignition of unstable lead nitrate compounds during handling is based on the following:

- Ignition frequency per drum handled is assumed to be  $1 \text{ E-2}$  to  $1 \text{ E-3}$  based on historical process knowledge (knowledgeable personnel indicated one known fire involving drums containing leaded gloves during many years of hundreds or thousands of drum handling activities), consideration of the drum handling procedures for emptying the drum contents into the glovebox which require care in handling the drums due to the shock sensitive nature of the lead compounds, and due to the low probability of generating sufficient shock impact to cause ignition (Memorandum NMRT/RF 95-455 from T. Burns to D. Dustin dated August 1, 1995 notes that the impact sensitivity of the isolated material to be in the range of 57 cm to 92 cm based on a 50 percent probability of ignition using a 2.5 kg hammer drop). It is highly unlikely that the lead nitrate material resident on the relatively soft and pliable gloves could be exposed to shock impacts of the size necessary to cause ignition.
- The number of drums requiring processing for this activity is approximately 140 or  $1 \text{ E2}$  per year.
- The probability that, if ignition of the lead nitrate compound occurs, a fire will be produced and sustained such that it affects a significant amount of material is  $1 \text{ E-1}$ . This is based on the impact sensitivity tests noted above which demonstrated that when ignition occurred, typically only a small percentage of the sample reacted.

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Consequently, the fire frequency due to ignition of the lead nitrate compounds is 1 E-1/yr to 1 E-2/yr (PC-2 event) It should be noted that the lead nitrate compounds were found to be thermally sensitive with autoignition temperatures for credible configurations of the material of 83 degrees C (181 degrees F) or higher Due to the lack of heat sources (other than a room fire discussed previously) associated with this activity, the frequency of fire due to autoignition is judged to be much less than the frequency for the other fire scenarios discussed above

The MOI dose associated with a fire during this activity is determined as follows

$$\text{MOI Dose (50 year bone - rem)} = \text{MAR (grams)} \times \text{RF} \times \text{LPF} \times \text{DCF}$$

Where	MAR = 1130 grams	(this amount is the equivalent plutonium inventory resident in the limiting drum)
	RF = 5 E-4	(this is the release fraction for fires involving combustible waste given in DOE-HDBK-3010-94)
	LPF = 1 E-3	(this is building leakpath factor is based on one credited stage of in-place DOP tested HEPA filters)
	DCF = 0.37 rem/gram	(this dose conversion factor accounts for atmospheric dispersion, breathing rate, etc to determine the dose per gram of material released from the building)

MOI Dose = 2 E-4 rem

This dose exceeds the DOE approved dose of 3 E-7 rem for a PC-2 event from References 1 and 2. However, References 1 and 2 did not evaluate fires for PC-1 and PC-2 events Therefore, this analysis establishes a new dose consequence for a PC-2 fire

As noted previously, the consequences of a spill involving the leaded gloves and packaging are judged to be insignificant since the nature of the MAR (contaminated waste) results in extremely low amounts of material released However, spills involving the washing solutions could result in more significant consequences The evaluation of these spills conservatively assumes that the entire 1130 gram plutonium equivalent MAR is involved in the spill



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The MOI dose associated with a solution spill during this activity is determined as follows

$$\text{MOI Dose (50 year bone - rem)} = \text{MAR (grams)} \times \text{RF} \times \text{LPF} \times \text{DCF}$$

Where	MAR = 1130 grams	(this amount is the equivalent plutonium inventory resident in the limiting drum)
	RF = 2 E-5	(this is the release fraction for liquid spills obtained from DOE-HDBK-3010-94)
	LPF = 1 E-3	(this building leakpath factor is based on one credited stage of in-place DOP tested HEPA filters)
	DCF = 0.37 rem/gram	(this dose conversion factor accounts for atmospheric dispersion, breathing rate, etc. to determine the dose per gram of material released from the building)

~~MOI Dose~~ = 8 E-6 rem

This dose exceeds the DOE approved dose of 3 E-7 rem for a PC-1 spill from References 1 and 2. It should be noted that this dose determination is conservative since it is assumed that the entire plutonium contents of the glovebox (up to the glovebox NMSL) and the entire americium contents of the most limiting drum are involved in the spill. However, spills of this nature are assumed to be anticipated events (PC-1). It also should be noted that spills involving transport or storage of these solutions into the ASRF Airlock and Barrel Dump Glovebox are bounded by this scenario since equivalent credited HEPA filtration exists in these areas as in the Barrel Dump Glovebox and since the inventory of solutions in these areas is also limited to a plutonium MAR equivalent of 1130 grams.

The above analysis is from Reference 3.

#### Unreviewed Safety Question Determination Questions

1. Could the proposed activity increase the probability of occurrence of an accident previously evaluated in a Safety Analysis? Yes ☒ No ☐ Explain

The fire frequency for this activity is determined by 1) the frequency of ignition of the lead nitrate compounds during material handling and by 2) the frequency of a room fire unrelated to this activity. In regard to item 2), the frequency of a room fire from any source is stated in the FSAR as 1 E-2/yr. The frequency of a room fire independent of this activity that is of sufficient size and intensity to impact the material associated with this activity is then necessarily less than 1 E-2/yr which falls within the PC-3 or PC-4 frequency bins. In regard to item 1), the frequency of a fire due to ignition of unstable lead nitrate compounds is 1 E-2/yr (PC-2 event). It should be noted that the lead nitrate compounds were found to be thermally sensitive with autoignition temperatures for credible configurations of the material of 83 degrees C (181 degrees F) or higher. Due to the lack of heat sources (other than a room fire discussed previously) associated with this activity, the frequency of fire due to autoignition is judged to be much less than the frequency for the other fire scenarios discussed above.

The spill frequency for this activity is assumed to be in PC-1. The Building 776/777 FSAR states that Radioactive spills occur at a rate of 8 E-1/yr (PC-2). Although the proposed activity represents a small increase in probability, it exceeds the spill probability analyzed in the FSAR.

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- 2 Could the proposed activity increase the consequences of an accident previously evaluated in a Safety Analysis? Yes ☒ No ☐ Explain

The consequences of a fire, spill, or explosion are evaluated in Reference 3 and above in the Failure Mode, Hazard, and Accident Identification section above. The MOI Dose consequence for a fire is 2 E-4 rem, the MOI Dose consequence for a spill is 8 E-6 rem. Explosions involving these drums are not judged to be credible based on the information presented in memorandum 95-RF-07952 (D F Dustin to T P Burns, dated October 13, 1995, therefore, the consequence is not evaluated.

The estimated MOI Dose = 8 E-6 rem for a spill exceeds the authorization basis dose of 3 E-7 rem for a PC-1 spill from References 1 and 2.

The estimated MOI Dose = 2 E-4 rem for a fire exceeds the authorization basis dose of 3 E-7 rem for a PC-2 event from References 1 and 2. However, References 1 and 2 did not evaluate fires for PC-1 and PC-2 events. Therefore, this analysis establishes a new dose consequence for a PC-2 fire.

- 3 ~~Could~~ Could the proposed activity increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in Safety Analyses? Yes ☐ No ☒ Explain:

The proposed activity does not directly interface with, or affect the operation of equipment important to safety. Equipment malfunction probabilities previously analyzed are not affected by the proposed activity.

4. Could the proposed activity increase the consequence of a malfunction of equipment important to safety previously evaluated in Safety Analyses? Yes ☐ No ☒ Explain:

The proposed activity does not introduce additional Material at Risk (MAR) or affect the ability of equipment important to safety to mitigate potential accidents.

- 5 Could the proposed activity create the possibility of an accident of a different type than any previously evaluated in Safety Analyses? Yes ☐ No ☒ Explain

The proposed activity does not introduce any unanalyzed accident initiators or precursors. The only potential accidents are fire, spill, and explosion, which are evaluated in the Failure Mode, Hazard, and Accident Identification section and in Questions 1, 2, 3, and 4 above.

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- 6 Could the proposed activity create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in Safety Analyses? Yes ☐ No ☒ Explain.

The proposed activity does not introduce any unanalyzed interfaces to equipment important to safety. The only equipment important to safety the proposed activity interfaces with is the gloveboxes in the Advanced Size Reduction Facility and Zone I HVAC. Performing the proposed activity does not directly or indirectly affect the operation of this equipment.

- 7 Could the proposed activity reduce the margin of safety as defined in the basis for any TSR? Yes ☐ No ☒ Explain.

The proposed activity does not affect the controls or assumptions credited in the basis of any Building 776/777 OSRs/TSRs or any VSS. Therefore, the margin of safety defined in the OSRs / TSRs is unaffected.

**NOTE 1** *If any of the above seven USQD questions are checked (✓) Yes, the activity is a USQ. The Program Manager, NS or Director, Engineering and Safety Services is immediately notified before proceeding.*

- 8 Does the activity constitute a USQ? Yes ☒ No ☐ Explain:

The answer to question 1 is "YES". The probability of a spill increased from PC-2 to PC-1. The answer to question 2 is "YES" the consequences from both a spill and a fire have increased. Therefore, ADVANCED SIZE REDUCTION FACILITY GLOVE WASHING AND INSPECTION, Procedure 4-R53-776-ASRF-006, Rev 0 constitutes an Unreviewed Safety Question (USQ) and DOE approval is required prior to proceeding with the proposed activity. This conclusion is based on comparing the activity to the criteria established in References 1 and 2.

The potential consequence of a spill is 8 E-6 Rem MOI, which exceeds the PC-1 dose criteria of 3 E-7 Rem. The potential consequence of a fire is 2 E-4 Rem MOI, which exceeds the PC-2 dose criteria of 3 E-7 Rem.

- 9 Does the activity require a change to the TSR (or OSR)? Yes ☐ No ☒

- 10 Could the activity result in exceeding the criticality safety acceptance criteria? Yes ☐ No ☒ Explain.

The proposed activity shall have a review per 4-B19-NSM-03 12, Nuclear Materials Safety Limits and Criticality Safety Operating Limits Surveillance. Adherence to the NMSLs identified will prevent the activity from exceeding the criticality safety acceptance criteria.

**NOTE 2** *If any of the above questions are checked (✓) Yes, DOE approval is required to proceed with the proposed activity.*

UNREVIEWED SAFETY QUESTION DETERMINATION  
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- 11 Does the proposed activity require an authorization basis related FSAR change?  
Yes ☒ No ☐

The proposed activity requires a change to the Building 776/777 accident analysis. By approving this USQ, the dose rate of Reference 1 will be changed for a PC-2 fire dose to 2 E-4 rem, and a PC-1 and PC-2 spill dose to 8 E-6 rem.

- 12 Hazardous Material Evaluation:

- 1 Does the proposed activity introduce a new hazardous material not evaluated in a Safety Analysis? Yes ☐ No ☒ Explain.

The chemicals that the proposed activity uses have been historically used in Building 776/777, and are evaluated in the FSAR.

- ~~1~~ 2 Does the activity increase the probability or consequences of an accident resulting from hazardous materials previously evaluated in Safety Analyses, or exceed any established inventory quantity limits? Yes ☐ No ☒ Explain.

The amounts of hazardous materials used are not increased from previously evaluated activities, and inventory quantity limits are not challenged. Therefore, the probability or consequences of an accident involving hazardous material are not increased.

NOTE 3 If Hazardous Material Evaluation has a question checked (✓) Yes, DOE notification is required to proceed with the proposed activity.

- 13 Are Compensatory Actions required? Yes ☐ No ☒

- 14 USQD Conclusion

The proposed activity has been evaluated and found to involve an Unreviewed Safety Question (USQ) because the probability and consequences of an accident previously evaluated in the Building 776/777 FSAR could increase (see Questions 1 and 2). The probability of a spill has been increased from PC-2 to PC-1. The estimated dose has been increased from 3 E-7 rem to 8 E-6 rem for a PC-1 spill. The estimated dose has been increased from 3 E-7 rem to 2 E-4 rem for a PC-2 fire.

Due to the increased probability of a spill, and the increased consequences for a PC-1 and PC-2 spill, and a PC-2 fire, question 11 is answered "YES", therefore, a Building 776/777 authorization basis FSAR change is required.

12/12